

## SECTION 5A

## DOORS AND MISCELLANEOUS METAL

1. APPLICABLE PUBLICATIONS: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

American Society for Testing and Materials (ASTM) Publications:

A 36-84a	Structural Steel
A 53-84a	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless
A 123-78	Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars, and Strip
A 386-78	Zinc Coating (Hot-Dip) on Assembled Steel Products
A 525-83	Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process

American Welding Society (AWS) Standard:

D1.1-83	Structural Welding Code - Steel
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American Institute of Steel Construction (AISC) Publications:

Specification for the Design, Fabrication and Erection of Structural Steel for Buildings (Nov. 1, 1978 with Commentary)

2. GENERAL REQUIREMENTS: The Contractor shall verify all measurements and shall take all field measurements necessary before fabrication. Welding to or on structural steel shall be in accordance with AWS D1.1. Items specified to be galvanized, when practicable and not indicated otherwise, shall be hot-dip galvanized after fabrication. Galvanizing shall be in accordance with ASTM A 123, A 386, or A 525, as applicable. Exposed fastenings shall be compatible materials, shall generally match in color and finish, and shall harmonize with the material to which fastenings are applied. Materials and parts necessary to complete each item, even though such work is not definitely shown or specified, shall be included. Poor matching of holes for fasteners shall be cause for rejection. Fastenings shall be concealed where practicable. Thickness of metal and details of assembly and supports shall give ample strength and stiffness. Joints exposed to the weather shall be formed to exclude water.

3. DISSIMILAR MATERIALS: Where dissimilar metals are in contact, the surfaces shall be protected with a coat of bituminous paint or asphalt varnish.

4. SUBMITTALS: Shop drawings shall be submitted in accordance with SPECIAL CLAUSES. Shop drawings shall indicate material thickness, type, grade, and class; dimensions; and construction details. Drawings shall include catalog cuts, erection details, manufacturer's descriptive data and installation instructions, and templates. Shop drawings for the following items shall be submitted:

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|---------------------|---------------|
| a) Doors and Frames | c) Louvers    |
| b) Door Hardware    | d) Ventilator |

5. WORKMANSHIP: Miscellaneous metalwork shall be well formed to shape and size, with sharp lines and angles and true curves. Drilling and punching shall produce clean true lines and surfaces. Welding shall be continuous along the entire area of contact except where tack welding is permitted. Exposed connections of work in place shall not be tack welded. Exposed welds shall be ground smooth. Exposed surfaces of work in place shall have a smooth finish, and unless otherwise approved, exposed riveting shall be flush. Where tight fits are required, joints shall be milled. Corner joints shall be coped or mitered, well formed, and in true alignment. Work shall be accurately set to established lines and elevations and securely fastened in place. Installation shall be in accordance with manufacturer's installation instructions and approved drawings, cuts, and details.

6. ANCHORAGE: Anchorage shall be provided where necessary for fastening miscellaneous metal items securely in place. Anchorage not otherwise specified or indicated shall include expansion shields, and powder-driven fasteners when approved for concrete.

7. STEEL PIPE: Steel pipe shall conform to ASTM A 53.

8. MISCELLANEOUS PLATES AND SHAPES: Miscellaneous plates and shapes for items that do not form a part of the structural steel framework, such as miscellaneous mountings and frames, shall be provided to complete the work.

9. STRUCTURAL STEEL DOORFRAMES: Structural steel door frames shall be neatly mitered and securely welded at the corners with all welds ground smooth. Structural steel shall conform to ASTM A 36.

10. LOUVER GUARDS, BAR TYPE: Louver guards shall be 1/2-inch round bars, spaced not over 6 inches on center horizontally. Bars shall be securely welded to the angle frame. Guards and fasteners shall be galvanized.

11. DOORS shall be constructed of structural steel conforming to ASTM A 36, assembled, welded, and equipped with all required hardware and accessories to complete the installation in the shop of a competent fabricator. Materials and fabrication of doors shall be in accordance with the applicable requirements of this section, the AISC Specification for the Design, Fabrication and Erection of Structural Steel for Buildings and

the AWS D1.1. Special care shall be exercised during welding to prevent warping. The surfaces shall be flat, parallel, and plumb after erection. The Contractor shall be responsible for proper installation of the door assembly so that operating clearances and bearing surfaces of the erected door conforms to the drawing requirements.

11.1 Hardware for steel doors shall be furnished and installed as indicated by the details on the drawings. The hardware shall be extra heavy duty industrial type which shall provide satisfactory design, mechanical strength, and operational characteristics. Extra heavy duty industrial type bolting device, with steel vertical extension rods and lever handles, shall be provided as shown. Staples and hasps bars shall be provided as shown. Three extra heavy duty industrial type steel strap hinges shall be securely welded to each leaf of the structural steel doors, and each hinge strap shall operate on not less than two grease packed ball bearing units. All hardware shall operate freely and without binding after doors have been hung and hardware installed.

11.2 Door Erection: All doors shall be erected plumb and true by skilled mechanics. Metal parts to be embedded in the concrete shall be set and adequately braced before the concrete is poured. The doors shall not be erected until all other construction, except painting, has been completed and the floors are broom clean.

11.3 Weatherstripping: Each door shall be provided with neoprene weatherstripping with adjustable metal retainers at sides and head and sweep at bottom, and shall conform to the details on the drawings.

12. LOUVERS shall be galvanized steel and the standard product of a manufacturer regularly engaged in the manufacture of louvers of the type shown, and the louvers provided shall essentially duplicate louvers that have been in successful operation for a period of at least 5 years. Louvers shall not be removable from the outside of the structure. Louvers shall be provided with 140 degrees Fahrenheit fusible link fire damper mechanism, equipped with suitable spring closing device, and 16 mesh insect screens. Blades shall be accurately fitted and edges of louver blades shall be folded or beaded for rigidity.

13. VENTILATOR CAP shall be of the stationary type, constructed of 22 gage galvanized steel sheets, and shall be furnished complete, including 16 mesh insect screens. The ventilator cap shall be designed to withstand stresses developed by winds up to and including 125 miles per hour, shall be waterproofed and stormproof under all operating conditions, and shall be free from backdraft. The design shall be such that the ventilator cap will be capable of self-cleaning by the action of the elements, with provision for carrying water and normal, wind-transported soil matter to the outside. Ventilator cap shall be adequately reinforced and well braced, with joints properly formed. Reinforcing members, braces, bolts, and rivets shall be of galvanized steel of sufficient size to assure rigid and sturdy construction, shall be properly applied and installed in such manner as to avoid corrosion, and shall be secured in an approved manner.

14. SHOP PAINTING: Unless otherwise specified, surfaces of ferrous metal, except galvanized surfaces, shall be cleaned and shop coated with the manufacturer's standard protective coating. Items to be finish painted shall not be given a bituminous protective coating. Surface shall be cleaned with solvents to remove grease and oil and with power wire brushing or sandblasting to remove loose rust, loose mill scale, and other foreign substances. Surfaces of items embedded in concrete shall not be painted.